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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,421	11/24/2003	Joel Christopher Kent	2024773-7035562001 (ELG05	6084

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EXAMINER	
SHERMAN, STEPHEN G	

ART UNIT	PAPER NUMBER
2629	

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/720,421	KENT ET AL.	
	Examiner	Art Unit	
	Stephen G. Sherman	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *24-31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the election of Group I filed the 1 August 2006. Claims 1-23 are now pending and claims 24-31 have been withdrawn.

Specification

2. The disclosure is objected to because of the following informalities:

In paragraph [0044] on page 14, line 20 and again on page 15, line 1 reference is made to "resistive touch region 130," however, as shown in Figure 7 this should be "resistive touch region 138."

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-2, 6-8, 10-13, 15, 19-21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Paragraphs [0009]-[0012] and Figure 4 of the specification) in view of Friend et al. ("Polymer Diodes", Physics World, Bristol, Great Britain, vol. 12, no. 6, June 1999, pages 35-40.).

Regarding claim 1, AAPA discloses a touch sensor, comprising:

a substrate having a resistive touch region with first and second oppositely disposed edges and third and fourth oppositely disposed edges (Figure 4 shows resistive coating 76 on the substrate 72 which has 1st and 2nd oppositely disposed edges and 3rd and 4th oppositely disposed edges as explained in paragraph [0009].);

a plurality of switches arranged in first, second, third, and fourth switch arrays extending along the respective first, second, third, and fourth touch region edges (Figure 4, shows arrays 82(1)-(4) extending along the respective edges.);

a first electrically conductive path coupled to the first and third switch arrays (Paragraph [009] explains that a first wire 80(1) shown in Figure 4 creates a first path which is connected to the first and third switch arrays.); and

a second electrically conductive path coupled to the second and fourth switch arrays (Paragraph [009] explains that a second wire 80(2) shown in Figure 4 creates a second path which is connected to the second and fourth switch arrays.);

wherein the first and second switch arrays close and the third and fourth switch arrays open when the first path is energized and the second path is grounded (Paragraph [0010] explains that x-coordinate is measured when wire 80(2) is grounded and 80(1) is energized such that switch arrays 82(1)-(2) are closed and switch arrays 82(3)-(4) are closed.), and the first and second switch arrays open and the third and fourth switch arrays close when the first path is grounded and the second path is energized (Paragraph [0010] explains that y-coordinate is measured when wire 80(1) is grounded and 80(2) is energized such that switch arrays 82(3)-(4) are closed and switch arrays 82(1)-(2) are closed.).

AAPA fails to teach wherein the diodes are conductive polymer diodes.

Friend et al. disclose of diodes that are made from conductive polymer (Page 35, Paragraphs one through three explain that semiconducting polymers can be used as the active element in diodes.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to make the diodes taught by AAPA out of semiconducting polymer as taught by Friend et al. in order to create diodes which are easy to manufacture and allow for the easy design of the interfaces between the various layers to make the device work.

Regarding claim 2, AAPA and Friend et al. disclose the touch sensor of claim 1.

Friend et al. disclose wherein each of the switches has two layers of electrically conductive polymer (First paragraph, second column of page 36 explains that there have been diodes developed containing two layers of electrically conductive polymer.).

Regarding claim 6, AAPA and Friend et al. disclose the touch sensor of claim 1.

AAPA also disclose wherein at least portions of the first and second paths comprise electrically conductive traces that extend along the respective edges of the resistive touch region (Figure 4 shows that the paths 82(1) and 82(2) have conductive traces extending along the edges of the touch region.).

Regarding claim 7, AAPA and Friend et al. disclose the touch sensor of claim 1.

AAPA also disclose wherein the resistive touch region comprises a resistive layer, and the touch sensor further comprises a coversheet disposed over the resistive touch region (Paragraph [0009] explains that a resistive coating 76 is applied to the rigid substrate 72 shown in Figure 4, and a uniform coating 78 is applied to the flexible coversheet 74.).

Regarding claim 8, AAPA and Friend et al. disclose the touch sensor of claim 1.

AAPA also disclose wherein the resistive touch region comprises a resistive layer and a dielectric layer disposed over the resistive layer (Figure 4 shows resistive layer 76 which is applied to the rigid substrate.). Although AAPA does not show in Figure 4 that

there is a dielectric layer on top of the resistive coating 76, it is well known in the touch panel art that there would be a dielectric layer on top of the resistive layer such that the electronics located on the cover sheet 74 do not directly contact the resistive coating on the rigid substrate 72.

Regarding claim 10, please refer to the rejection of claim 1, and furthermore the examiner understands that if the touch sensor is capable of grounding and energizing the paths as explained in the rejection of claim 1, that the device would also have control circuitry coupled to the paths to perform the function.

Regarding claim 11, AAPA disclose a touch sensor, comprising:

a substrate having a resistive touch region (Figure 4 shows substrate 72 with resistive touch region 76, as explained in paragraph [0009].);

a plurality of devices arranged in a linear array extending along an edge of the resistive touch region (Figure 4, items 82(1)-(4), and paragraph [0009].), each of the devices having first and second terminals and being configured to allow electrical current conduction from the first terminal to the second terminal when in a first state, and prevent electrical current conduction from the second terminal to the first terminal when in a second state (Paragraph [0010] explains that the devices can be put into two states: forward bias or reverse bias, in which forward bias allows electrical current conduction and reverse bias does not.); and

an electrically conductive path coupled to one of the first and second terminals of the device array, wherein the other of the first and second terminals of the device array is electrically coupled to the resistive touch region (Figure 4 shows that one terminal is connected to touch region 76 and the other to one of paths 80(1) or 80(2) respectively.).

AAPA fails to teach wherein the diodes are conductive polymer diodes.

Friend et al. disclose of diodes that are made from conductive polymer (Page 35, Paragraphs one through three explain that semiconducting polymers can be used as the active element in diodes.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to make the diodes taught by AAPA out of semiconducting polymer as taught by Friend et al. in order to create diodes which are easy to manufacture and allow for the easy design of the interfaces between the various layers to make the device work.

Regarding claim 12, AAPA and Friend et al. disclose the touch sensor of claim 11.

AAPA also discloses the touch sensor comprising first and second electrically conductive paths (Figure 4 shows paths 80(1) and 80(2).);

wherein the resistive touch region has first and second oppositely disposed edges and third and fourth oppositely disposed edges (Figure 4 shows resistive coating 76 on the substrate 72 which has 1st and 2nd oppositely disposed edges and 3rd and 4th oppositely disposed edges as explained in paragraph [0009].);

wherein the plurality of devices are arranged in first, second, third, and fourth arrays extending along the respective first, second, third, and fourth touch region edges (Figure 4, shows arrays 82(1)-(4) extending along the respective edges.); and

wherein the first and second terminals of the first device array are respectively electrically coupled to the first path and the resistive touch region (Figure 4 shows device array 82(1) connected to path 80(1) and the resistive touch region 76.), the first and second terminals of the second device array are respectively electrically coupled to the resistive touch region and the second path (Figure 4 shows device array 82(2) connected to path 80(2) and the resistive touch region 76.), the first and second terminals of the third device array are respectively electrically coupled to the resistive touch region and the first path (Figure 4 shows device array 82(3) connected to path 80(1) and the resistive touch region 76.), and the first and second terminals of the fourth device array are respectively electrically coupled to the second path and the resistive touch region (Figure 4 shows device array 82(4) connected to path 80(2) and the resistive touch region 76.).

Regarding claim 13, AAPA and Friend et al. disclose the touch sensor of claim 11.

AAPA also discloses wherein each of the devices has only the first and second terminals (Figure 4 shows that the devices have only the terminal connected to the path or the resistive touch region.).

Regarding claim 15, this claim is rejected under the same rationale as claim 2.

Regarding claim 19, this claim is rejected under the same rationale as claim 6.

Regarding claim 20, this claim is rejected under the same rationale as claim 7.

Regarding claim 21, this claim is rejected under the same rationale as claim 8.

Regarding claim 23, this claim is rejected under the same rationale as claim 10.

6. Claims 3-5 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Paragraphs [0009]-[0012] and Figure 4 of the specification) in view of Friend et al. ("Polymer Diodes", Physics World, Bristol, Great Britain, vol. 12, no. 6, June 1999, pages 35-40.) and further in view of Greczynski et al. (Thin Solid Films, vol. 354, 1999, pages 129-135.).

Regarding claim 3, AAPA and Friend et al. disclose the touch sensor of claim 2.

AAPA and Friend et al. fail to teach wherein one of the electrically conductive polymer layers is a p-type semiconductor layer and the other of the electrically conductive polymer layers is an n-type semiconductor polymer layer.

Greczynski et al. disclose of a diode in which one electrically conductive polymer layers is a p-type semiconductor layer and another electrically conductive polymer

layers is an n-type semiconductor polymer layer (Page 129, paragraphs 2 and 3 explain that oxidized PEDOT is used as a hole transport layer in prototype polymer based LEDs and that PPV is used as the n-type layer.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to have one of the layers taught by the combination of AAPA and Friend et al. be n-type and the other layer to be p-type as taught by Greczynski et al. in order to allow for the facilitation of holes to be injected into the PPV layer and also to significantly increase the lifetime of the diode.

Regarding claim 4, AAPA, Friend et al. and Greczynski et al. disclose the touch sensor of claim 3.

Greczynski et al. also disclose wherein the p-type conductive polymer layer is composed of doped polythiophene, poly (3,4-ethylenedioxphiophene)-poly(4-styrenesulfonate) (Page 129, paragraphs 2 and 3 explain that oxidized PEDOT is used as a hole transport layer in prototype polymer based LEDs.).

Regarding claim 5, AAPA, Friend et al. and Greczynski et al. disclose the touch sensor of claim 4.

Greczynski et al. also disclose wherein the n-type semiconductor layer is composed of doped poly(2-methoxy, 5-(2'-ethyl-hexyloxy)-1, 4-phenylene vinylene) (Page 129, paragraphs 2 and 3 explain that PPV, poly(p-phenylenevinylene), is used as the n-type layer.).

Regarding claim 16, this claim is rejected under the same rationale as claim 3.

Regarding claim 17, this claim is rejected under the same rationale as claim 4

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Regarding claim 18, this claim is rejected under the same rationale as claim 5.

7. Claims 9 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Paragraphs [0009]-[0012] and Figure 4 of the specification) in view of Friend et al. ("Polymer Diodes", Physics World, Bristol, Great Britain, vol. 12, no. 6, June 1999, pages 35-40.) and further in view of Yaniv et al. (US 4,827,084).

Regarding claim 9, AAPA and Friend et al. disclose the touch sensor of claim 1.

AAPA and Friend et al. fail to teach of a touch display, comprising a display device and a touch sensor, wherein the touch sensor forms a front surface of the display device, and wherein the substrate is transparent.

Yaniv et al. disclose of a touch display, comprising a display device and a touch sensor, wherein the touch sensor forms a front surface of the display device, and wherein the substrate is transparent (Figures 1 and 8 show of a touch display which comprises touch sensors 61a, 61a, 51b and 61b and a display device, with the touch sensors being located on the display device and the substrate being transparent (The

substrate would have to be transparent in order to see the display.), see column 16, lines 8-24.).

Regarding claim 22, this claim is rejected under the same rationale as claim 9.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Paragraphs [0009]-[0012] and Figure 4 of the specification) in view of Friend et al. ("Polymer Diodes", Physics World, Bristol, Great Britain, vol. 12, no. 6, June 1999, pages 35-40.) and further in view of AAPA (Paragraphs [0013]-[016] and Figure 5 of the specification).

Regarding claim 14, AAPA and Friend et al. disclose the touch sensor of claim 11.

AAPA discloses in another embodiment wherein the each of the devices comprises a third terminal for alternately placing the respective device in an on state and an off state, the touch sensor further comprising another electrically conductive path coupled to the third terminals of the device array (Figure 5 and paragraph [013] explain that paths 96(1)-(4) are a third terminal which controls the ON and OFF state of the devices.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to make the diodes taught in the combination of AAPA and

Friend et al. transistors as taught by AAPA in order to allow for a more stable detection of touch with a higher reliability than that of a diode.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SS

25 August 2006

AMR A. AWAD
PRIMARY EXAMINER